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DEFINING JOINT VISION 2010'S DOMINANT MANEUVER

A MONOGRAPH
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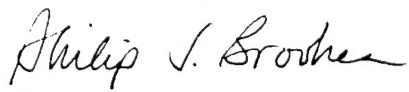
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Abstract

DEFINING JOINT VISION 2010'S DOMINANT MANEUVER by MAJ W. Russell Hall, USA, 55 pages.

The monograph analyzes maneuver and proposes these questions. What is maneuver? What is maneuver, in the Joint Vision (JV) 2010 sense, and what makes it dominant?

To answer these questions, the monograph studies three stages in the evolution of warfare. The study shows that the objective of maneuver is to gain a decisive advantage in time and space. Critical elements that shape maneuver include command and control, equipment, and logistics. However, technology is not the whole answer. Militaries apply technological advances through innovative doctrinal and organizational approaches to gain a decisive advantage. Significant changes in doctrine and organization occur only when a military recognizes and responds to changes in the relevant military operational environment. These include changes in national policy, technology, and methods of warfare.

The monograph then analyzes changes in the current environment. This demonstrates that the objective of maneuver remains constant. However, maneuver becomes decisive when a joint force commander orchestrates simultaneous and successive precision operations with small, tailored organizations and achieves operational objectives. If in these operations the commander can achieve the maximum or near maximum capability of his forces and negate that of his opponent's, then he can execute a dominant maneuver.

Defining Joint Vision 2010's Dominant Maneuver

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Second Term

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I. Introduction

> Ideas are important. Born or adopted in particular historical circumstances, they affect man's understanding of his world and, therefore, influence behavior. Ideas are joined to form concepts and concepts are merged to form systems intended to achieve particular purposes.
>
> Dr. Richard Swain[1]

The Chairman of the Joint Chiefs of Staff introduced the concept of dominant maneuver in his recently released Joint Vision (JV) 2010. JV 2010 seeks "Full Spectrum Dominance" as the defining characteristic of United States (US) Armed Forces in the 21st century.[2] It proposes that joint forces will achieve this dominance through the application of four operational concepts: dominant maneuver, precision engagement; full dimensional protection; and focused logistics. Unfortunately, JV 2010 does not provide a thorough description of these concepts. The definition of dominant maneuver, in particular, is not adequate to understand the concept. Even an informed reader sees that "dominant maneuver" leaps substantially beyond current definitions of maneuver. This difficulty raises several crucial questions. What is maneuver? What is the purpose of JV 2010? What is maneuver, in the JV 2010 sense, and what makes it dominant?

In an attempt to answer these questions, this monograph studies three recent stages in the evolution of methods of warfare. The study shows that the essential objective of maneuver is to *gain a decisive advantage in time and space* over an enemy or a situation. Command, control, communications, computers and intelligence (C4I), equipment, and logistics are critical elements that shape maneuver. Essentially, as a force improves these elements, it potentially increases its ability to maneuver. However, technology is not the whole answer. Militaries must apply technological advances with

innovative doctrinal and organizational approaches, tactics, techniques, and procedures to gain a decisive advantage. By applying technology through innovative operational and organizational concepts, maneuver will evolve and the space in which forces operate will expand while the time it takes to accomplish their task will decrease.

Significant changes in doctrine and organization occur only when a military recognizes and responds to changes in the relevant military operational environment. Changes in national security objectives, technology, and changes in the methods of warfare are the most important. To a great extent, national policy and technology exert a strong influence on the methods of warfare. However, the military methods that armed forces employ determine whether a force achieves a decisive advantage or not. This monograph examines three historical campaigns to illustrate this process.

In the modern era, maneuver passed through three periods of significant change: Napoleonic; late 19th century; and the Second World War. Napoleon achieved a decisive advantage over the Austrians at Ulm because he understood his military environment better than his opponent. He took advantage of these changes through the adoption of innovative approaches in organization, command and control, and maneuver. While Napoleon also made changes in his logistical support methods, logistics still hindered his ability to maneuver. A critical aspect of the Napoleonic-style of warfare included the division of his army into dispersed corps capable of fighting independently for limited periods of time. Arguably, with the formation of independent corps within the army, Napoleon broke the link with the massed maneuver and limited war aims that characterized the dynastic era.[3] However, this required more decentralized control in

execution. His opponent failed to make any similar adjustments and lost. Interestingly, Napoleon's dominance was not the product of major technological advances.

Arguably, the next stage in the evolution of warfare occurred in the 1860s. In this era, characterized by the Austro-Prussian war of 1866, the industrial revolution began to have a major impact on warfare. Inventions such as the railroad and telegraph offered major advantages to a country that exploited their advantages for military purposes. Prussia, and in particular, her Chief of Staff, Helmuth von Moltke the Elder, recognized the important of these factors. His operational and organizational innovations gave the Prussians a decided advantage in the mobilization, deployment, and employment of their forces. This allowed armies to maneuver separately. Armies were only assembled on the field of battle. Moltke planned the campaign and only gave instructions in an attempt to keep the campaign on track. The critical elements that influenced their ability to maneuver were improvements in command and control, through the integration of the telegraph. The Austrians again failed to adequately understand and integrate the new factors in to their military methods.

The final stage in the evolution of maneuver occurred at the outset of the Second World War. Both France and Germany had access to the similar technologies. However different national objectives and different lessons learned from World War I (WWI) led to each nation adopting different operational and organizational concepts. The Germans successfully integrated tanks, artillery, motorized infantry, tactical air support, and improved communications into an offensive doctrine, blitzkrieg. Under this doctrine the Germans used very decentralized command and control to fight rapidly throughout the

tactical depth of their opponent. Against the French and her allies, the Germans fought a series of distributed tactical battles to advance across France and achieve operational and strategic objectives.

Essentially, the evolution of maneuver shows that national objectives and technology influence a country's doctrine and organization. The analysis also provides key information about the nature of warfare. In today's uncertain and changing environment, America requires armed forces that are highly mobile and capable of world-wide deployment. Advances in technology continue to make forces more powerful and lethal. This allows smaller combined arms forces to operate and control a much larger area. They do so using more distributed and non-linear methods. To achieve success in this situation requires improvements in communications and greater decentralization of command and control. It also requires systems with increased speed, weapons range and lethality, while still providing protection. Finally, it requires a logistical system that can support increasing resource demands.

Lessons learned from the historical analysis combined with an understanding of the current environment provide insights into what maneuver potentially might look like in the future. The conclusion from this study is that the objective of maneuver remains the same, only the means to conduct maneuver are more complex. This highlights the daunting task JV 2010 is attempting to accomplish. Essentially, JV 2010 represents the Chairman's attempt to guide Service doctrine development and acquisition programs, from the "top down."[4] Inherent in this process is the assumption that joint operational doctrine will serve as the framework within which Service doctrine must fit. Today, joint

doctrine is more planning oriented than operations oriented. JV 2010 is an attempt to make operational concepts, such as dominant maneuver, inherently joint operational capabilities. This is a reaction to the changing nature and methods of warfare briefly mentioned above. It is also a reaction to the fact that US forces, while arguably the best at joint operations in the world, still operate, with some exceptions, as separate Services.

JV 2010 seeks to break the prevailing pattern of inter-Service action. It is an effort to reduce both Service redundancies and increase the capabilities of joint forces at lower levels. The end result, given the guidance in JV 2010, is the emergence of a "tailor-to-task organizational ability"[5] that provides future joint force commanders with the ability to create small, yet highly capable, task forces rapidly to accomplish the assigned operational tasks. To achieve this goal requires a greater interoperability and precision in the use of military capabilities than currently exists. The key to achieving greater interoperability and precision lies in leveraging information technology. ADM Owens described this as "achieving systems synergism."[6] In other words, the integration of various systems to create an outcome that is greater than the sum of the individual parts. It means a smaller, more capable, force designed to accomplish specific tasks.

Essentially, the US concept of maneuver does not change. Maneuver still seeks to gain a decisive advantage in time and space. However, maneuver becomes dominant when a joint force commander can tailor a specific organization, or even several organizations to accomplish specific tasks. The commander can then take these organizations and orchestrate a series of simultaneous and successive precision operations to achieve operational and strategic objectives. If in the orchestration of these

operations, the joint force commander can maximize his forces' capability and minimize the capability of his opponent, then he has positioned his forces to achieve a decisive result. Decisive results obtained in this manner constitute dominant maneuver.

II. Joint Vision 2010 and Its Linkage to the Past

As stated previously, JV 2010 seeks to increase US military capabilities in areas such as maneuver by leveraging information technology. In many ways, JV 2010 is a landmark document. It is the first widely distributed document that prescribes changes in US joint military operational capabilities and doctrine. Current joint doctrine stresses the joint planning process. JV 2010 goes beyond that and seeks to serve as "the conceptual template for how we will channel the vitality of our people and leverage technological opportunities to achieve new levels of effectiveness in joint warfighting."[7] So, while it does not represent current doctrine, it serves as a guide for the development of future joint doctrine. To accomplish this, JV 2010 tasks the military Services to develop unique Service capabilities to achieve specific joint operational capabilities. Thus, JV 2010 represents the Chairman's attempt to guide Service doctrine development and acquisition programs, from the "top down."[8]

JV 2010 relies on information technology to enhance current US capabilities in command, control, communications, computers and intelligence (C4I) and to transform operational concepts, like dominant maneuver, into joint warfighting capabilities that combine to achieve full spectrum dominance.

Thus, JV 2010 tasks the Services to explore the potential of advanced C4I systems to improve the ability of US forces to maneuver, conduct precision engagements

and provide full dimensional protection and focused logistics. However, this does not imply that improvements come strictly from technological advances. While historical analysis demonstrates that C4I system improvements often enhance maneuver, this is not the whole answer. Factors other than technology influence military innovation as well.

JV 2010 cannot predict the results of exploring dominant maneuver. Therefore, the meaning and intent of the conceptual definition is intentionally vague. JV 2010 attempts merely to suggest what this concept might look like. This monograph is an attempt to understand better dominant maneuver, primarily from a landpower perspective.

So, what is maneuver, in the JV 2010 sense? At the simplest level, Americans view maneuver currently as *gaining a decisive advantage*. Maneuver is also a function of both time and space.[9] How does this compare to the JV 2010 definition? JV 2010 tells us that:

> Dominant maneuver will be the multidimensional application of information, engagement, and mobility capabilities to position and employ widely dispersed joint air, land, sea, and space forces to accomplish the assigned operational tasks. Dominant maneuver will allow our forces to ***gain a decisive advantage*** by controlling the breadth, depth, and height of the battlespace.[10] (emphasis added)

When all the qualifying words and phrases are stripped away, JV 2010's maneuver is also to gain a decisive advantage in time and space. The real difference here is one of practical application. Differences between militaries or between periods in history influence the practical application of maneuver. Further, campaign studies demonstrate that changes in the approaches to maneuver during these periods typically relate to improvements in three elements: C4I; equipment; and logistics.

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While the elements that help define maneuver apply throughout recent history, the context that defines them clearly changes. For example, logistical demands on armies conducting offensive operations have increased from the time of Napoleon to the present. Therefore, while C4I, equipment, and logistics help define maneuver capabilities in a given period, the evolution of these elements indicate the need to study changes in the environment or the context to fully understand maneuver.

The next question is what makes maneuver dominant? JV 2010 makes the assumption that US forces will achieve full spectrum dominance. So, to really understand dominance, we need also to understand its context. JV 2010 describes an uncertain future and advances in information technology. However, these aspects represent only a part of the environment that influenced JV 2010 emphasis on dominance.

The focus on the term "dominant" reflects the Nation's strong desire to build armed forces that can achieve decisive results. Decisive military results occur when national objectives; technology; and the methods of warfare integrated successfully in an overarching national military strategy. National objectives includes such things as a nation's foreign and domestic policies, social and economic characteristics, and threats to these objectives. Technology concerns those artifacts and processes of a given period applicable to the military. The methods of warfare are the operational and organizational approaches adopted by a military to meet the national objectives. They serve as an established, yet dynamic, set of beliefs that guide the military's action. Militaries now call this doctrine. Inherent in this set of beliefs are the historical perspectives from the

past that provide lessons learned to the military. Variations in these factors cause different results. In essence, these factors represent the context or environment in which forces seek decisive results. Clearly, context is important.

The interrelationship between policy, technology, and techniques influence a military's operational approach to maneuver and other forms of operations. For example, national policy provides the forces and equipment with which the military conducts operations. These objectives also influence or even dictate the type of strategy the military adopts, such as an offensive or defensive strategy. The technology of the period influences the mobility, communications, and other aspects of the armed forces' capabilities.. The methods of warfare a nation adopts derive from the first two factors, the leadership of the military, as well as the military's history and lessons learned.

Intuitively, ideas about dominating an opponent or achieving decisive results in war run throughout history. Dr. Robert Epstein points out in his study of Napoleon that, over the last two hundred years, war seems to act like a pendulum that swings back and forth from decisive outcomes on one side to long protracted struggles on the other. He believes that the difference at the two extremes is the symmetrical or asymmetrical relationship between the two forces. When the relationship between the two opponents is asymmetrical, the potential for decisive operations exists.[11] That is, armed forces become dramatically superior to their foes when they achieve a significant advantage in some aspect or dimension of warfighting. This advantage is typically the result of the successful integration of national policy, technology, and the methods of warfare.

Nations that successfully integrate these factors and produce asymmetrical relationships between forces dominate during their time. Examples that typically come to mind include Napoleon, the Prussian army under Helmuth von Moltke the Elder, and Germany's dramatic victory over the French and her allies at the beginning of World War II (WWII). Arguably, each period represents a different stage in the evolution of warfare and the search for decisive results. The Napoleonic era represents a change from the limited war aims of the classical or dynastic era. The age of Moltke demonstrates the influence of the industrial revolution on warfare. WWII represents the age of motorization and mechanization with the use of tanks, aircraft, and aircraft carriers. Just as important for this study, maneuver or dilemmas concerning maneuver are important to the evolution of warfare during these periods. The American military draws on these periods, as well as others, in its expression of maneuver. Understanding the relationship between national policy, technology, and the methods of warfare in each period provides useful insights into the current environment.

In particular, each campaign demonstrates that significant changes occur only when a military recognizes and responds to changes in the relevant military operational environment. To a great extent, changes in national security objectives and technology, exert a strong influence on the methods of warfare. The resultant military methods that armed forces employ determine whether a force achieves a decisive advantage or not. This monograph examines three historical campaigns to illustrate the successful integration of these factors. It emphasizes the significance of maneuver in each campaign and how changes in command and control, equipment, and logistics can make maneuver decisive.

III. The Age of Napoleon

> The first coherent new concept of warmaking since that of Genghis Khan was demonstrated in the early campaigns of young Napoleon Bonaparte in Italy and Egypt. In his hands, this concept continued to dominate warfare for the first fifteen years of the nineteenth century, and its influence still persists.

> Trevor Dupuy, The Evolution of Weapons and Warfare[12]

In 1805, Napoleon's military operations constituted a change in warfare. The victory of the Grand Armee over the Austrians at Ulm through maneuver is evidence of that change. His battlefield achievement resulted primarily from French advantages in command and control and organization. These advantages resulted from changes in political, economic, and social factors that influenced national policy. The French Revolution mobilized the general population and provided Napoleon with a Nation-in-Arms. He leveraged the wealth of manpower and materiel support through improvements in operational and organizational concepts and transformed a dynastic army into the Grand Armee.

Napoleon sought a decisive battle at the point of his choosing. He planned the movements of his corps so that one could fix the enemy while the remainder maneuvered to cut the opponent's lines of communications. In this sense, independent movement of corps only represented semi-independent action. Napoleon always sought a maximum concentration of his forces at the decisive point. Changes in organization, command, communications, intelligence, and logistics facilitated Napoleon's improvements in the classic style of warfare. Dr. James Schneider viewed the development of the division

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and corps system within an army as "the beginning of the end of the classical style of warfare."[13] In essence, Napoleon raised this style to the highest level.

National Policy.

The military methods of Napoleon resulted from changes in political, social, and economic factors. These factors also distinguished early Napoleonic France from the rest of Europe. The French Revolution brought a new national policy to France. As David Chandler described it, "once France had let the genie of nationalism out of the bottle, there was no way of controlling the consequences."[14] The French Revolution along with the Napoleonic Wars "tore down the medieval structures of Europe, opened the paths of 19th century liberalism, and hastened the advent of nationalism."[15] The French Revolution changed both the size and composition of French military organizations. The ideological fervor of the revolution compelled Frenchmen, and later others, to join the army of Napoleon. This gave him a constant supply of manpower. Increased industrial production and improvements in roads and infrastructure provided greater materiel and the means to support this army.[16]

Technology

Technological advances contributed little to Napoleon's style of warfare. There was very little improvement in the weapons or equipment used by Napoleon from that of Frederick the Great before him. Michael Howard stated that the armaments were virtually identical.[17] Martin van Creveld went so far as to hypothesize that the secret to Napoleon's success was in his ability to separate strategy from the technological and economic backwardness of his time.[18] He simply made the best use of that available.

Methods of Warfare

With the advent of the Nation-in-Arms, warfare changed from the limited

dynastic style of war to nearly unlimited war conducted by Napoleon. The differences

reside in the scale and objectives. Tactically, the Grande Armee fought much like the

army of Frederick the Great.[19] Napoleon still sought the decisive battle of annihilation.

He still used the "strategy of a single point."[20] The concept of a Nation-in-Arms allowed

him to leverage a wealth of manpower and materiel support to field a much larger force.

Effective command and control of such a force by one man were nearly impossible with

the old methods[21]. This led to changes in the operational and organizational approaches

to war. The major innovations were the use of autonomous divisions and corps,

improvements in command, communications, and intelligence, (C3I) and logistics. Other

innovations included the employment of skirmishers, more flexible use of artillery, and

the use of the column attack instead of the line. [22]

The creation of autonomous divisions and corps gave the army greater speed and

flexibility since units could move along several roads simultaneously. Although the

concept did not originate with Napoleon, Napoleon used it effectively with a large

national army. During the years of relative peace prior to 1805, Napoleon reorganized

his army into eight corps. Each corps was capable of independent movement and action.

This organization enhanced Napoleon's ability to outmaneuver his opponent. Archer

Jones provided an excellent description of this approach.

> "Most important was the ability of an army dispersed in divisions to force
> combat. A dispersed army could turn positions, a maneuver long baffling to a
> well-concentrated force that had to fight as a unit. The French infantry's
> offensive attributes -- marching rapidly and going into action quickly -- compelled
> an opponent either to resist or retreat to the rear. It was no longer possible to

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retreat sideways or, as Montecuccoli had done at Turenne, to march away past a flank. Now such a retreating army had to meet a division, which would soon be reinforced by the rest of the army."[23]

The dispersed movement by corps accomplished several things. First, it provided greater mobility and speed to the army as a whole. Instead of massive movements along one or two approaches, the various divisions and corps converged on the enemy from multiple approaches. Second, it provided greater protection for the army as one corps was rarely more than a day's march from one or more of the others. This allowed Napoleon to fix with one force while other corps maneuvered to cut off and defeat the opponent. Finally, while logistical support proved difficult for all armies of that age, the movement of the corps eased the burden. Because corps generally marched on separate routes, resupply was somewhat easier. It also allowed them to live off the land more easily.[24]

The Nation-in-Arms also provided Napoleon with a more reliable force. Previously, mercenaries made up a large part of the dynastic armies. The units were often unreliable and prone to desertion. The increased reliability of soldiers aided in the viability of the corps concept. It also allowed Napoleon to increase greatly his intelligence gathering. His opponents still used their cavalry primarily for counterattack and pursuit. Napoleon trusted his cavalry enough to begin using them for reconnaissance and economy of force missions.[25] The greater reliability of soldiers also made the use of skirmishers possible.

Arguably, the most revolutionary approach adopted by Napoleon was in his method command and control. David Chandler, in his detailed study of Napoleon, gave Napoleon credit for establishing the first "fully comprehensive staff organization."[26] A

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larger staff was necessary given the expanded size of the army and its organization. However, with eight dispersed corps under his command, Napoleon also decentralized the tactical command of the corps. He directed the large movements of the corps and, for the most part, observed the tactical battles. Decentralized command required several innovations. First, communications became inherently two-way. Corps commanders provided Napoleon with information on their activities and he provided them with direction. He also created a system that van Creveld called the "directed telescope." This system allowed Napoleon to cut through the established lines of communications by having special adjutants general who visited units and reported what they saw. The combination of decentralized command, two-way communications, a general staff system, and directed telescopes provided Napoleon with greater control.[27]

Napoleon's approach to maneuver resulted primarily from political, economic, and social changes that influenced national policy. The French national policy supported and maintained a large army. The proper employment of larger forces required changes in operational and organizational approaches. Most of the differences represented by the "doctrine"[28] and organization of Napoleonic warfare were a natural evolution from that of Frederick the Great and others. This evolution gave Napoleon a significant advantage. His opponents did not begin to make similar adjustments until after 1805. The coalitions that opposed Napoleon always had the capability to match and probably exceed the manpower that Napoleon mobilized. Only after limited reforms, especially in Austria and Prussia, did Napoleon's opponents transform their armies and defeat him.[29]

Napoleon at Ulm in 1805

At the outset of the campaign of 1805, Napoleon had eight corps garrisoned along
the western coast of continental Europe. From these dispersed locations he began a
strategic maneuver to position his forces against the Austrians at Ulm.[30] Napoleon
sought a decisive battle. In many ways, Napoleon's plan resembled the scheme of
maneuver of his earlier campaigns, such as Marengo. However, the distance traversed
was over five times longer than any attempted in the previous century.[31]

On September 24, 1805, Lannes' Vth Corps and Murat's cavalry crossed the
Rhein. Napoleon directed these units into the Black Forest to deceive the Austrians. The
Austrians, under Archduke Ferdinand and General Mack, began moving their 40,000 man
force westward to meet what they hoped was the French main effort. When the Austrians
fell for the feint, Napoleon moved the rest of his army into position. Bernadotte's I
Corps moved south toward Munich in case the Russians arrived early. Marmont's II
Corps established itself along the Lech River, effectively blocking a retreat. The III and
IV Corps crossed the Danube near Donauworth and approached Ulm from the east.
Ney's VI Corps approached Ulm from the north. As the Austrians, now up to almost
70,000 strong, positioned their forces along the Iller south of Ulm, Lannes's V Corps and
Murat's cavalry completed their move from the Black Forest. They crossed the Danube
shortly hereafter. At this point, Napoleon had the Austrians in his grasp.

On October 8, Murat's cavalry captured 6,000 Austrians at Wertingen. Mack
then realized he was in trouble. He sought to cross the Danube to his north and to cut the
French line of communications. When he did, he found Ney's Corps established on the

south bank. When Mack turned back toward Ulm, Soult's Corps swung south of Ulm. On the night of the 15th, the Archduke managed to escape with some cavalry. The French completed the encirclement of Ulm on the 17th and Napoleon demanded Mack's surrender.[32] Napoleon outnumbered his Austrian opponent and reinforcements were too far away. After he lost hope, Mack surrendered.

Napoleon clearly outmaneuvered the Austrians at Ulm. However, the Austrians also contributed to their own disaster. First, the Austrians believed that Napoleon intended to direct his major offensive into northern Italy, as he had done before in 1796 and 1800. Second, poor intelligence led Mack to believe that the French had crossed the Rhine at Strausberg long before they did. As a result, he rushed his forces into Bavaria with the belief that his force could concentrate quickly against the French.[33]

Conclusions

The Ulm campaign demonstrated how factors internal and external to a military created conditions for change. Napoleon still sought the decisive battle. However, he used the effects of the French Revolution to change the methods of warfare. In doing so, he created an asymmetrical relationship between his forces and those of the Austrians. Through changes in organization, C3I, and logistics, Napoleon achieved a decided advantage in his approach to maneuver. He expanded the battlefield in time and space. However, his strategy remained that of the single point. This advantage soon disappeared, as his opponents began to emulate his style.

Napoleon's strategy and methods greatly influenced early US military development. Two writers of the Napoleonic era, Jomini and Clauswitz, wrote

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principally about Napoleon. During most of the 19th century, the US Military Academy taught the Napoleonic style of warfare almost exclusively and did so mainly through the works of Jomini.[34] As West Point graduates constituted the bulk of the peace time officer corps, their previous studies greatly influenced US military doctrine. Thus, to a large extent, both the North and the South fought using a Napoleonic style of warfare during the American Civil War. Russell Weigley, the noted historian, even called Major General Henry Halleck, the Commanding General of the Union Army, the "foremost American student of Jomini." Weigley noted that Halleck wrote the first American book that systematically attempted to explore the principles of strategy. Halleck even took his definition of strategy from Jomini.[35] Interestingly, Halleck's mentor was Dennis Hart Mahan, West Point's instructor on the art of war. Mahan's son was the famous naval theorist, Alfred Thayer Mahan. Addington called him, "the Jomini of the sea," because Mahan claimed that principles of war governed the sea as much as on land.[36] Like Napoleon, Mahan advocated the decisive battle and the strategy of a single point.[37]

Vestiges of Napoleonic strategy remain in US military doctrine today. Joint Publication (JP) 3-0, Doctrine for Joint Operations, outlines "facets of operational art" that, among others, include: centers of gravity; indirect versus direct, culmination; and decisive points. Those who read Clauswitz' magnum opus, On War, recognize that the origin of these terms resides in the Napoleonic era. These terms, in particular, also influence American approaches to maneuver.

Fifty years later, another European power rose, improved upon the Napoleonic style of warfare, and achieved a decisive result. Prussia became a dominant European power and remained so for the next 90 years.

IV. The Age of Moltke

> ... if one considers the economy with which Moltke employed material forces in order to achieve results according to a preconceived plan, then the victory of Koniggratz deserves to be regarded as a work of art.

Gordon Craig, The Battle of Koniggratz[38]

Against the Austrians at Koniggratz in 1866, Moltke and his Prussian army demonstrated their version of an asymmetrical advantage over the other European powers. The Prussians studied Napoleon warfare extensively. They also recognized the impact of the nation-in-arms and new technologies on warfare. However, the Austro-Prussian war was not just a demonstration of larger armies and technological improvements such as the breach loading rifle, the telegraph, or the railroad. It represented how the Prussians had effectively applied these advances through operational and organizational changes to transition to new methods of warfare in the achievement of national objectives.

The architect of this evolution in warfare was the Prussian Chief of Staff, Helmuth von Moltke the Elder. He believed that the nation-in-arms combined with new technologies meant some of the old methods no longer applied. For example, he no longer felt constrained by Jomini's concept of interior lines or that an army had to concentrate its forces prior to battle.[39] Additionally, while he believed the railroad enhanced the strategic offensive, he thought the rifle and artillery made the tactical

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defense superior.[40] Moltke saw the beginnings of what the US military termed operational art. The key to Prussian victory was their effective integration and synchronization of the mobilization, deployment, and employment of their forces. Simply stated, they achieved superiority in strategic mobility and operational maneuver.

National Policy

As a member of the coalition that defeated Napoleon, Prussia gained European prestige. However, the Austrian's hegemony remained until after Otto von Bismarck became the President of the Ministry and Minister of Foreign Affairs in 1862. His aspirations for a unification of the German states under Prussia led to the Austro-Prussian War in 1866. Perhaps, the rationale for the war came from Moltke when he said, "... it was a struggle long foreseen and calmly prepared for, recognized as a necessity by the cabinet, not for territorial aggrandizement, but for an ideal end -- the establishment of power."[41]

Actually, tensions existed between Prussia and Austrian for years. Austria had essentially controlled the German Confederation since 1815. However, nationalism, liberalism, and the 1859 war with France forced Austria to attempt reforms within the Confederation and reestablish her hegemony.[42] These factors combined with Prussia's growing industrial and economic power created the conditions for what was in essence, a civil war. The final straw was the disagreements over Schleswig-Holstein after the 1864 Danish War.[43] Henceforth, Prussia sought freedom from Austrian hegemony.

The conflict with Austria over Schleswig-Holstein changed the threat for Prussia. Arguably, the Napoleonic wars promoted cooperation between Prussia and Austria for

nearly seventy years. As cooperation became conflict, the alliance that fought Napoleon finally ended. Prussia either sought this end directly or welcomed it. Either way, preparations for such an event began when William I (1861-1888) ascended the throne. In his first speech, he announced his intent to transform the Prussian Army into the Prussian Nation-in-Arms.[44]

Technology

The industrial revolution helped transform the Prussian Army. This age introduced the locomotive, telegraph, breach-loading rifles, and improvements in artillery. Each, in their own way, shaped the evolution of warfare. However, technology alone was not decisive. It was through their application in new operational and organizational approaches that changed the nature of war.

Methods of War

Prior to 1866, Moltke recognized that improved firearms, transportation, and communications, combined with the ability of nations to raise and maintain larger armies required changes in strategy, tactics, command, and organization.[45] The Prussian army sought and achieved an acknowledged superiority in the mobilization and deployment. Moltke used the railroad lines to deploy the armies over a broad front. This expanded the theater spatially. The railroads also allowed the Prussians to reduce the time needed for mobilization and deployment by almost one half. The genesis for this superiority was Moltke's concept of "one continuous strategic-operational sequence combining mobilization, concentration, movement, and fighting."[46]

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Prussia created a military system that could achieve their national objectives through improved mobilization. The Prussian mobilization set the stage for the outcome of the Austro-Prussian war. First, the Prussians rigorously applied a system of military conscription. Michael Howard described this system of compulsory military service as, "the foundation for Prussian military effectiveness."[47] After serving three years on active duty, these trained soldiers spent four additional years with the reserve and then they were transferred into the landwehr. A conscript served all three phases of his military obligation within a regionally based army corps. This regionally based system increased greatly the speed and efficiency of mobilization.[48] This gave the Prussians a decisive advantage in time.

The Austrians on the other hand had significant problems during mobilization. Lacking a well-developed system of railroads and facing a war on two fronts, Bohemia and Italy, the Austrians had to mobilize early in the crisis. Even so, the Prussians mobilized nearly the same size force as the Austrians in less than half the time.[49] Given Prussia's smaller overall population compared to the other major powers, they clearly raised the mobilization process to a new level. Other European nations failed to realize, until too late, that the Prussians managed to combine large numbers, speed and quality in their concept of a Nation-in-Arms.[50] Nevertheless, had Austria not had to face the Kingdom of Italy, Austria would have had a larger force.

Once mobilized, the Prussians clearly deployed their forces in an innovative manner. They did this in two notable ways. Moltke and the General Staff used the railway efficiently to deliver forces to the theater. The Prussians prepared detailed

contingency plans. They coordinated effectively the mobilization, and planned the use of the railway and road systems to move forces rapidly to key strategic points.[51] Every unit knew its assigned role and assembled at the designated rail station upon a simple notification. In this way, thousands of fully equipped troops moved rapidly to the frontier shortly after notification.[52] The Austrian system was greatly inferior and they only had one rail line into theater. The Prussians used five different rail lines to move their forces into the theater. Moltke estimated he could concentrate 285,000 troops in Bohemia in 25 days. Since the Austrians had only one rail line, he knew they needed about 45 days to assemble 200,000.[53] Neither the Austrians or the French achieved even this rate of deployment by rail in 1859.[54] The distribution of rail lines provided Moltke with the ability to expand the size of the theater and the major southern approaches into Prussia.

The deployment advantage meant that Moltke did not have to concentrate his armies until he identified the main avenue of approach for the Austrian army. This advantage allowed Moltke to develop a plan to outflank the Austrians in one continuous strategic-operational sequence that linked the mobilization, deployment and employment of the armies together to annihilate the Austrian army[55]. This strategy showed that Jomini's rule of interior lines need not always apply. Moltke demonstrated that if you space your armies so the enemy cannot defeat one without being flanked by the others, then the advantage of interior lines becomes a disadvantage of encirclement.[56]

Moltke's deployment strategy required a new C3I system. Moltke used a strategy of centralized planning and decentralized execution. Centralized planning set the military machine effectively in motion. This system emphasized centralized strategic

and operational communications via the telegraph and decentralized command and control at the tactical level. Even with the telegraph, Moltke realized the problems associated with the increasing size of militaries and the increased complexity of war. Once the battle began, he thought the subordinate commanders were in the best position to direct the fight. Therefore, he believed his responsibility was to coordinate the initial movements and set the stage for battle based on the overall strategy.[57]

Moltke's perceived inability to command and control the actual employment of forces in combat represented the recognition of the three levels of war: strategic, operational, and tactical. At the strategic level, Moltke believed his role was to understand the strategic objectives of Prussia and raise, train, and equip a military force to achieve those objectives. At the operational level, he saw himself as the theater commander. In that role, he sought to develop a campaign plan that used strategic assets like the railroad and telegraph to first deploy and then to orchestrate the movement of his armies to defeat the Austrians. However, given the size of the theater of operations and the limitations of the telegraph, Moltke realized that he could not command and control the various distributed tactical battles that would necessarily precede the main engagement with the Austrian army.

While the railroad and telegraph solved some problems of movement and control, they did not solve all of them. The 1866 campaign revealed that an infantry force deployed by rail had limits. The size of the armies and the more specialized munitions, such as those for the needlegun and the artillery, meant that armies could no longer live almost exclusively off the land. The required supplies moved quickly to the railhead by

train. However, soldiers unloaded the trains and then loaded the supplies on horse-drawn wagon for the slow movement to the front.[58] The rate of movement from the railhead and the number of wagons available determined the reasonable distance that an army could move away from the end of the rail line and still receive adequate amounts of supplies to sustain itself. This distance and the number of rail lines into a theater determined the reasonable limits of maneuver. If the distances became too great, then the armies could not link up and defeat an opponent who could concentrate his forces.

Tactically, Koniggratz also represented a turning point in the conduct of warfare. For the first time in centuries, European armies fought with weapons with different capabilities. Moltke recognized the impact of breach-loading rifles and rifled artillery. Frontal attacks and bayonet charges were fruitless against the breach-loading rifle. The Prussian military was superior to the Austrians in all but artillery. The tactical battle was a contest between the Austrian artillery and the Prussian needle gun, each supreme in their own sphere.[59] While the Austrians had rifled muskets with good range, the needle gun fired almost six times a musket's rate of fire. Also, soldiers fired it from the prone position, presenting a much smaller target. The Prussian weakness in this battle was their artillery. Prussian artillery was mainly short range smooth-bore, although they had some new breach-loading rifled guns. The Prussians failed to use their artillery effectively. The Prussians failed to use their artillery inconjunction with infantry fire and maneuver in a combined arms role. The Austrians had rifled guns and used them better in support of the infantry.

The fight for Trautenau on June 27, 1866, demonstrated the change in warfare from the tactical perspective. Poor security left the Prussian I Corps under Bonin vulnerable to flank attack from the Austrian X Corps under Gablenz. While Gablenz defeated Bonin and forced his Corps back into the mountains, Gablenz paid dearly for the victory. He lost three times as many soldiers as the Prussians. The needle gun repulsed virtually every charge. Gablenz observed that the bayonet played no role in the battle. He won with flanking attacks and artillery. Subsequently, he outlawed bayonet charges within his corps.[60] From his studies of the 1859 and 1864 campaigns, Moltke deduced that infantry firepower would win the battles of the future and adopted tactics to support it.[61] In the campaign, the Prussians only lost 9,000 soldiers compared to 44,000 Austrian losses.[62]

Moltke did not stop the evolution after Koniggratz. He learned from Koniggratz how to use effectively cavalry and artillery against France four years later. Ironically, the Prussian would deploy superior artillery in the Krupp breach-loading rifled gun while the French fielded the superior Chasseepot rifle. Since the Prussians used a superior rifle and inferior artillery at Koniggratz, this suggests that superior methods of warfare won these two campaigns for the Prussians, not the technological superiority of their weapons. After the Franco-Prussian war, the continental European states copied Prussian conscription, mobilization, railway, and General Staff practices.[63] Arguably, the adoption of strategy and tactics by others demonstrated also that the Prussians had achieved an evolution in the conduct of warfare.

Koniggratz

Several factors led to the Prussian victory. First, the abilities of the Prussian leadership and general staff exceeded greatly those of her opponent. Second, the Prussian mobilization and deployment placed the Prussian forces in positions of advantage over the Austrians. Third, the Prussian infantry used the Dreyse needlegun, a breech-loading rifle that gave them a six shots to one advantage. Had Austria won at Koniggratz the strategic and operational superiority of the Prussians would not have mattered. So, while tactical parity arguably existed, Prussian advantages at the strategic and operational level negated it.

Conclusions

The industrial revolution was an important contributor to this stage in the evolution of maneuver. Using the railroad and the telegraph, the Prussian mobilized and deployed three armies on separate lines of advance to fix and envelop the Austrians at the Koniggratz. Moltke used the speed of the Prussian mobilization and the expanded deployment of his forces to achieve a decisive advantage and defeat the Austrians. The key elements to victory were the railroad, the telegraph, and the fact that the Prussian armies remained within the limits of their logistical support. Combined with Moltke's doctrine of encirclement or kesselschlacht, it produced the fruits of victory.

Arguably, Moltke demonstrated the beginnings of operational art at Koniggratz. He planned a campaign that linked strategic objectives and mobilization with operational maneuver and tactical battles to achieve victory. Like Napoleon at Ulm, the Prussians used new methods while their opponents remained entrenched in the old ways. This gave

the victors a decisive advantage. Napoleon and Moltke both fought essentially a battle of annihilation. However, the changes in warfare brought about by the industrial revolution raised the question of whether or not the pre-industrial era theorists still applied. Moltke "violated" Jomini's principle of interior lines. The Prussian campaign in Bohemia in 1866 differed from Napoleon's Ulm campaign. The Prussians mobilized far larger forces in a shorter time over a greatly expanded area. Strategic mobility drastically reduced the deployment time. Initially, Moltke deployed on a broad front to protect the approaches to Prussia. The armies maneuvered and fought separate battles until they finally converged at Koniggratz. This distributed maneuver also played an important role in 1870 against the French. It became a characteristic of modern methods of war.

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V. Blitzkrieg 1940

> In each case, revolutionary change in the conduct of war required the advent or maturation of new military technologies (e.g., the internal combustion engine, armor, etc.), their integration into new military systems (e.g., the tank or long range bomber), the adoption of appropriate operational concept (e.g., the armored breakthrough and its exploitation), and finally, the requisite organizational adaptation (e.g., the Panzer division and the Clausewitzian approach to war embedded in the German troop regulations of the era.

Thomas Keaney and Eliot Cohen, Gulf War Air Power Survey Summary Report[64]

The German army in 1940 represents the third stage of maneuver development in this campaign study. It was an army that rebuilt itself after it collapse in 1918, using many lessons learned following Koniggratz. The lessons learned combined with innovative thinking to create a new method of warfare that drew from the best of their experiences.

The Prussian Army applied lessons learned at Koniggratz in their victorious campaign against the French in 1870. In the wars of German unification, Moltke sought to encircle his opponent through strategic movement and operational maneuver. Then, using the superiority of the defense, he planned to destroy his opponents as they attempted to break out. He succeeded finally against the French at Metz and Sedan. This approach became known as Kesselschlacht.[65] Moltke's successor, Alfred von Schlieffen, sought the perfection of Kesselschlacht to defeat the French rapidly. When WWI erupted in 1914, the Germans failed to achieve the required rapid decision. They could not sustain the movement of their armies.[66] During planning, Schlieffen understood the increased logistics burden associated with such an ambitious concept. Schlieffen's plan required the army to conduct a strategic march that dwarfed those of Moltke.[67] However, the sustainment and movement problems went unresolved. As the rate of the German advanced slowed, it cost precious time that allowed the French and British forces to reposition. When the forces collided, the steadily weakening offensive ended in trench warfare.

Before the WWI ended, the Germans attempted to solve the dilemma of trench warfare. In 1918, they promulgated a new warfighting manual entitled, The Attack in Positional Warfare.[68] The manual prescribed methods to penetrate enemy defenses and methods to turn that penetration into a strategic breakthrough. Lupfer called this operational approach, infiltration tactics. Infiltration tactics emphasized a combined arms attack with close cooperation between infantry and artillery. The German offensives of 1918 used infiltration tactics and achieved success. However, the German

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army found itself exhausted by August 1918.[69] After the war, the combination of Kesselschlacht and infiltration tactics served as the genesis for Blitzkrieg doctrine.

The years between the two World Wars saw the further development of motorization and mechanization in most armies. However, the operational and organizational approaches taken by the various nations in response to similar technologies differed greatly. Germany advocated the offensive, while France adopted defensive. The results gave Germany the initiative which led to decisive victory.

National Policy

The effects of German national policy on their military doctrine were both simple and complex. At the simplest level, Germany still faced the threat of a two-front war. Even though Germany had a treaty with Russia, many did not believe it would last. The threat of a two-front war contributed to an offensive strategy. The Treaty of Versailles denied German tanks, aircraft, and fixed field fortifications and limited the size of her navy. Freed from outdated weapons from WWI and without fortifications, Germany had to adopt at least a mobile defense strategy if not an all out offensive one. Reductions forced by the Treaty of Versailles, allowed Germany to develop an elite pool of military professionals.[70] These factors, and others, combined to create the offensive strategy. Finally, Hitler simply wanted war. Matthew Cooper, in his study of Germany and the war, summed up the National Socialist general strategy in three words: Grossdeutschland; Lebensraum; and Weltmacht.[71] Therefore, while all these factors pointed toward an offensive strategy, only the combination of the two turned it into reality. What Hitler wanted, the military promised to deliver.

For various political reasons, France adopted a defensive strategy against Germany. In his study of the interwar years, Robert Doughty pointed out various reasons for France's defensive strategy. First, France believed it could not win a war quickly with Germany. Their perceived lessons from WWI remained vivid. Second, France lost the Franco-Prussian War with a professional army. They won WWI with a return to the nation-in-arms.[72] Third, France lost a greater percentage of the population in WWI. This resulted in low birthrates and forced France to pass laws in 1927 and 1928 that called for a lower rate of conscription. This created a situation whereby France could not adequately defend itself without mobilization.[73]

Technology

On March 16, 1935, Hitler renounced the Treaty of Versailles and began to fully rearm the Wehrmacht.[74] Technological advances that saw limited use during WWI, became the mainstays of WWII. These included the tank, improved artillery, air defense weapons like the famous German 88-millimeter, and fighter and bomber aircraft. These systems influenced doctrine and organizational designs. The wireless radio was a major advance in communications. The Germans incorporated the new radios into their tanks with great results.

Methods of Warfare

During the interwar years, each military conducted their own struggle as to the best way to further overcome the stalemate of the Western Front. Again, national objectives and their individual lessons learned from history influenced the doctrinal development process as much as technology did. Arguably, each country had access to

the same new weapons. The French reverted back to their theory of the primacy of the defense and built the Maginot Line. The Germans viewed WWI as a national failure, not a military one, especially at the tactical level. Therefore, their tactical development began with the premise that their infiltration tactics worked. Upon this premise, Germany created a new method of warfare prior to World War II, some called it blitzkrieg. They combined the various arms of armor, infantry, artillery, and tactical air support, into a self-supporting division structure and called it a panzer division. Along the same lines, the Germans also created motorized divisions to operate with the panzer divisions. By 1937 they formed panzer corps with one motorized and one panzer division. They enhanced their command and control system with a better communications system, in the form of vehicle mounted radios. This combination enabled the Panzer division to conduct the penetration and breakthrough operations that characterized blitzkrieg. However, the bulk of the army was still infantry.

Ken Deighton, in his book Blitzkrieg, noted that the name mattered little, what remained important was the fact that the basic concept was German. He stated that Blitzkrieg originated in the flank attack of Moltke and the encirclement theories of Schlieffen. The success of the WWI penetration and breakthrough tactics, or infiltration tactics, reaffirmed the viability of the offense.[75]

However, a major shift in ideology began to occur. The strategies of Moltke and Schlieffen sought the annihilation of the enemy (vernichtungsgedanke). A new strategy began to take hold based loosely on the penetration and breakthrough: a strategy of the indirect approach. While both strategies sought the same end, decisive maneuver, the

methods differed dramatically. The newer strategy owed its origin to the German General Heinz Guderian. He called it the armored idea.[76]

Cooper's description of the difference between the two strategies demands noting. He states:

> Physical destruction in one was supplanted by paralysis in the other as the primary aim; well-coordinated flanking and encirclement movements were replaced by unsupported thrust deep into the enemy's rear areas as the method; guarded flanks and unbroken, if strained, supply lines gave it velocity and unpredictability as the basic rules of operation; centralization of control was superseded by independence of action as the first condition of command; and the mass infantry armies, whether or not supported by tanks and aircraft, made way for the relatively small powerhouses of the armored divisions as the primary instrument of victory.[77]

Obviously, this caused a rift between the more traditional officers and the revolutionaries like Guderian and Rommel. The rift continued throughout the war.

One of lessons that Germany thought it learned after their failure to envelop the French in WWI was that they had simply pushed the army beyond its logistical, movement, and endurance limits.[78] However, logistical challenges plagued the Wehrmacht despite their victory over Poland. Van Creveld cited several reasons for these shortcomings. First, the railroads that in many ways made warfare on this scale possible were strategic assets. They deposited materiel at the depots. Tactical units transported them to the front lines. Of the 103 division available for Poland, only 16 had motor transport. The tactical logistics hauler remained primarily the horse.[79] This meant that the Germans could not sustain easily a deep armored penetration.

France 1940

The German resolution to the conflict between the armored idea and a strategy of annihilation determined the initial war plans for the invasions of both Poland and France. Cooper argued that the invasion of Poland remained a strategy of vernichtungsgedanke (annihilation). The original plan (Operation Yellow, dated 19 October, 1939) for the invasion of Holland, Belgium, and northern France called for a limited territorial objective, somewhat like the original Schlieffen plan.[80] However, the armored idea lived still in Guderian and others, including General Erich von Manstein. Manstein learned of Operation Yellow after it had been changed to essentially a frontal attack into Belgium. Generals Manstein and von Rundstedt argued that the plan lacked the ingredients for decisive victory. They recommended moving the main effort south into their area to form a surprise attack through the Ardennes and cut all the way across France to the coast. Of course, this also meant that von Rundstedt gained command of the majority of the German armor.[81] Eventually, Hitler approved a version of Manstein's plan. However, this still failed to represent Guderian's armored idea. The decisive maneuver, nevertheless, resulted in the destruction of the enemy.[82]

Ironically, soon after Hitler approved the plan, Manstein took command of an infantry corps. General Sodenstern, a traditionalist, replaced him. Without Manstein, Rundstedt declined to pursue a deep armored penetration as well. Later, Guderian, commanding XIX Panzer Corps, proposed an armored attack over the Meuse with the objective of achieving a breakthrough.[83] However, once the attack began, the Germans crossed easily over the Meuse. Thereafter, Hitler and his high command became worried

about the pace of the operation. They feared counterattacks and ordered the attack slowed to allow time to reinforce the flanks. Thus, as Cooper stated, "... the advance degenerated from the armor enthusiasts' ideal of a swift, deep thrust, ending only with the defeat of the enemy, into a succession of short, sharp jumps, with a pause between each of the regroupings."[84] The final irony of all this came when the mechanized forces closed on the coast south of Dunkirk. Hitler then gave the order for them to stop while the Luftwaffe attempted to destroy the Allied units attempting to escape.[85] Escape they did. While the Luftwaffe provided great ground support to the advancing mechanized formations, the appeared ill-suited for the mission at Dunkirk. The Germans still achieved a stunning victory but, it was not the armored idea.

Conclusions

Germany created a new method of warfare prior to World War II, some called it blitzkrieg. They created highly mobile mechanized formations supported by a large number of infantry divisions. To facilitate the higher tempo of operations, they enhanced their command and control system with a better communications system, in the form of vehicle mounted radios. This combination enabled the Panzer division to conduct the penetration and breakthrough operations that characterized blitzkrieg. As the French failed to develop an equally effective doctrine, the Germans quickly overran them. Germany and France had access to the same technologies. However, they developed different operational and organizational approaches. These resulted from each country's reaction to factors present in the environment at that time.

Interestingly, while Germany developed a viable doctrine for decisive maneuver, some, like Guderian, believed that the mobility of armor and motorized forces combined with tactical air support and enhanced communications created a formula for success other than through annihilation. Guderian believed that such a force freed from centralized control would paralyze the enemy, if further freed from centralized control. The Soviets developed a similar theoretical mindset called Deep Operations Theory. Its founder, Marshall Tuckachevsky, developed this theory initially as a way to avoid the stalemate of trench warfare. His theories formed the basis for modern Soviet doctrine.[86]

These theories and the resultant doctrines, at least in the Soviet and now Russia case, continue to challenge the theories of Clauswitz and Jomini. Clearly, modern warfare pushes beyond the original intent of the pre-industrial theorists. While these theories still have value, the US armed forces must put these theories into perspective.

VI. Implications for the Future

> Enhanced command and control, and much improved intelligence, along with other applications of new technology will transform traditional functions of maneuver, strike, protection, and logistics. These transformations will be so powerful that they become, in effect, new operational concepts: dominant maneuver; precision engagement; full dimensional protection; and focused logistics. These operational concepts will provide our forces with a new conceptual framework.
>
> Joint Vision 2010[87]

The previous campaign studies highlighted several key aspects about maneuver. First, successful maneuver requires the ability to adequately command and control the forces available for the operation. Second, new equipment like the breach-loading rifle, the locomotive, or the tank only provides a decisive advantage when applied through

operational and organizational concepts. Third, the campaigns also demonstrate that logistics often "wags the dog." In each case, logistical concerns almost brought the operations to a halt. The logistical support for an operation requires careful planning and even then forecasts remained optimistic. Finally, these elements taken together define the characteristics of maneuver in a particular period.

The key characteristics of maneuver that distinguished each of these periods were the degree of dispersion between elements of a force and the rate of movement of those elements. In each case, the degree of dispersion increased with advances in command and control, equipment, and logistics. The increased dispersion gave that force an advantage in space as it relates to maneuver. Also, as dispersion increased, subordinate elements of the armies included the various arms or branches of service required for independent action during that era. Similarly, the rate of movement of the forces increased with advances in the same elements. The increased rate of movement gave that force an advantage in time as it related to maneuver.

Therefore, these campaigns demonstrated that the purpose of maneuver was to gain a decisive advantage in time and space. In each case, the victorious military was the one that recognized and responded to changes in the military operational environment and gained the decisive advantage in time and space. The application of advances in command and control, equipment, and logistics through innovative operational and organizational concepts changed each country's maneuver capability. The increase in maneuver capability resulted from the ability to effectively command, control, and

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sustain the movement of increasingly more complex forces in an increasingly dispersed manner faster than the opponent.

If dominant maneuver is the product of national policy, technology, and organizational and operational methods, then what constitutes dominant maneuver in 2010. To answer that question we must first understand the US policy environment.

National Policy

US National Security Strategy and the derived military objectives are in the process of change. For nearly fifty years, one scenario dominated US defense planning. The US developed doctrine and plans, acquired equipment, and trained to fight and win a war in Europe. The individual Services were responsible for meeting these needs. Joint operations were largely an afterthought. The basis for defense planning has now shifted from a single threat to the development of capabilities. Instead of focusing on a strategy of containment and deterrence against communism and the Warsaw Pact threat, military strategy and planning now focuses on opportunities.[88] Contrary to those who may view this as simply preparing to fight the last war better, Mr. Stephen Rosen points out in his study of military innovation that "intelligence about the behavior and capabilities of the enemy has been only loosely connected to American military innovations."[89] Analysis of these factors demonstrates the need for the US military to change, even without a defined threat.

JV 2010 draws from the strategy of "engagement and enlargement" with a continental US-based force as opposed to the previous strategy of forward-basing for deterrence. The result is the need for a highly mobile force, capable of moving anywhere

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in the world.[90] Inherent in this strategy is the requirement for forces that can conduct the full spectrum of operations. This also implies forces with multiple or varied capabilities. This reinforces the trends identified in the campaign studies that with advances in command and control capabilities and technology, forces increasing become combined arms or even multi-service oriented.

The threats associated with National policy are also in the process of change. To cope with this situation, the US military now conducts defense planning based on capabilities instead of a specific threat.[91] This explains why JV 2010 addresses generic capabilities versus specific systems or threats. National policy reactions to the perceived threat also dictate the size, composition and overall military strategy of armed forces. Lack of a true peer competitor suggests that the size of the US military may continue to decrease. This suggests the need for greater interoperability between the Services as the size of each decreases.

Technology

Rapid advances in information-based technologies indicate the opportunity to improve command, control, communications, and computer (C4I) systems.[92] These advances offer near-real time data gathering and information sharing. If developed, these capabilities may provide US forces with greater shared information about a situation and an opponent in order to facilitate maneuver. If the US military truly drives the development of these capabilities from the "top down," this will give US forces greater interoperability. Other advances in information-based technologies, such as computer processors, software, and sensors, may improve US capabilities in long-range, precision

guided, weapon systems. The combination of these two areas may give US forces an unprecedented capability in precision force use. Essentially, this would allow a joint force commander to employ a unit or a weapon system at a specific target at exactly the time desired. Additionally, the use of improved computer and communications equipment would also provide US forces with the ability to forecast, requisition, track, and deliver the various types of logistical support required in a more efficient manner. Instead of building mountains of supplies in a theater, supplies could arrive "just in time" and therefore, reduce the time US forces require to prepare for an operation or campaign. Together these indicators suggest that US forces may have the capability to operate in a more dispersed manner with a higher rate of movement. Again, operating in a more dispersed manner indicates that US forces will conduct combined arms or even joint Service operations at even lower unit levels.

Methods of Warfare

Even the three short campaign studies demonstrate that achieving a decisive advantage or the ability to conduct decisive operations appears fleeting. With JV 2010 and the related Service visions, the US military proposes a continuation of their current advantages over the other nations of the world. Instead of waiting for a potential adversary to develop a force capable of challenging US forces, JV 2010 indirectly proposes to accept that task. JV 2010 does not predict the future environment. It simply takes the best military force and tasks the Services and Unified Commanders to make it more efficient, effective, and probably smaller.

Arguably, the capabilities of US forces cannot improve significantly without advances in command and control and equipment. Several conditions currently exist that make effective command and control essential. First. US forces are very complex organizations. Second, movement rates continue to increase. Third, the unit level of combined arms formations is lower. This makes units more capable of independent operations and allows them to operate with greater dispersion. Independent, dispersed combined arms forces can conduct rapid simultaneous and successive operations.

Conclusions

The campaigns and the analysis of the current environment reinforce our basic understanding of maneuver as an operational approach. In each, the intent of maneuver is the movement and positioning of forces to gain a decisive advantage in time and space. This understanding provides more meaning to the current definition of maneuver:

> the movement of forces in relation to the enemy to secure or retain positional advantage, usually to deliver -- or threaten delivery of -- the direct and indirect fires of the maneuvering force. Effective maneuver keeps the enemy off balance and thus also protects the friendly force. It contributes materially in exploiting successes, preserving freedom of action, and reducing vulnerability by continually posing new problems for the enemy. [93]

Arguably, this definition still applies. However, the JV 2010 definition adds more emphasis on joint operations with its multidimensional application of joint forces. This indicates that maneuver, in the JV 2010 sense, will routinely involve more that one Service. For this to become reality, the Chairman and the Unified Commanders must reduce the reliance on Service redundancies and increase the capabilities of joint forces at lower levels. The end result, given the guidance in JV 2010, is the emergence of a "tailor-to-task organizational ability" [94] that affords future joint force commanders with

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the ability to rapidly create small, yet highly capable, task forces to accomplish the assigned operational tasks. The achievement of this goal requires a greater interoperability and precision in the use of military capabilities than the US currently has.

To achieve greater interoperability and precision, the Chairman clearly intends to guide Service doctrine development and acquisition programs, from the "top down" with JV 2010.[95] Inherent in this process is the assumption that joint operational doctrine will serve as the framework within which Service doctrine must fit. Today, joint doctrine is more planning oriented than operations oriented. JV 2010 is an attempt to make operational concepts such as dominant maneuver an inherently joint operational capability. This is a response to the relevant military operational environment described above. It is also a reaction to the fact that US forces, while arguably the best at joint operations in the world, still operate, with some exceptions, as separate Services except at high levels.

The key to achieving interoperability and precision comes from leveraging information technology. Based on these factors, JV 2010 makes several assumptions about future US military requirements and capabilities. First, US forces will achieve a higher degree of battlespace awareness through improvements in sensors and communications. Second, forces will share data about their battlespace and turn the data into information through advanced command, control, communications, computers, and intelligence (C4I) systems. This will give US forces a greater level of knowledge about the battlespace than their opponent. JV 2010 calls this dominant battlespace awareness. Finally, US forces will then translate that information into precision force use.[96] Based

on these assumptions, the JV 2010's hypothesis is that this combination will give US forces a dominant maneuver capability. It is also what ADM Owens describes as "achieving systems synergism."[97] In other words, the integration of various systems to create an outcome that is greater than the sum of the individual parts.

To paraphrase JV 2010, dominant maneuver requires the application of asymmetrical advantages in capabilities to position and employ forces so they can dominate the battlespace and accomplish assigned operational tasks. The positioning of forces relates primarily to movement and is therefore part of the equipment and logistics domains. C4I relates to the achievement of dominant battlespace awareness, the positioning and employment of forces, and the accomplishment of tasks. The asymmetrical aspects of these capabilities rest primarily in a force's degree of dispersion, rate of movement, degree of precision, and their interoperability, both joint and combined with other allies.

Understanding this provides tremendous insights into the dominant maneuver concept. Essentially, the US concept of maneuver does not change. The objective is still to gain a decisive advantage in time and space. However, maneuver becomes dominant when a joint force commander can tailor a specific organization, or even several organizations to accomplish specific tasks. The commander can then take these organizations and orchestrate a series of simultaneous and successive precision operations to achieve operational and strategic objectives. If in the orchestration of these operations, the joint force commander can achieve the maximum or near maximum capability of his or her forces and negate that of the opponent or situation, then he has achieved a decisive result and therefore executed dominant maneuver.

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ENDNOTES

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17. Michael E. Howard, War in European History, (Oxford: Oxford University Press, 1976) p. 76.

18. Martin van Creveld, Command in War, (Cambridge, MA: Harvard University Press, 1985) p. 59.

19. Chandler, The Campaigns of Napoleon, pp. 334-348. Chandler notes that the Grand Armee used these tactics until 1809 at the Battle of Wagram, when the quality of French infantry began to deteriorate.

20. Schneider, "The Loose Marble -- and the Origins of Operational Art." p. 86.

21. van Creveld, <u>Command in War</u>, p. 98.

22. Howard, <u>War in European History</u>, p. 76

23. Archer Jones, <u>The Art of War in the Western World</u>, (Oxford: Oxford University Press, 1987) p. 348.

24. Martin van Creveld, <u>Supplying War: Logistics from Wallenstein to Patton</u>, (Cambridge: Cambridge University Press, 1977) p. 74. Van Creveld provides a logistical account of the entire Ulm-Austerlitz campaign.

25. Richard A. Preston and Sydney F. Wise, <u>Men in Arms</u>, pp. 189-190.

26. Chandler, <u>The Campaigns of Napoleon</u>, p. 367.

27. van Creveld, <u>Command in War</u>, pp. 96-102. Both Chandler and van Creveld hold up Napoleon's C3I system as revolutionary. See also Chandler, <u>The Campaigns of Napoleon</u>, pp. 367-378.

28. The author acknowledges that Napoleon's operational approaches did not actually constitute what the US Armed Forces would call doctrine today. However, his combination of strategy, grand strategy, and tactics goes beyond that previously demonstrated.

29. Gunther E. Rothenberg, "Moltke, Schlieffen, and the Doctrine of Strategic Envelopment," in <u>Makers of Modern Strategy from Machiavelli to the Nuclear Age</u>, ed. Peter Paret, (Princeton: Princeton University Press, 1986) p. 165.

30. Howard, <u>War in European History</u>, p. 84.

31. Chandler, <u>The Campaigns of Napoleon</u>, p. 385.

32. Christopher Duffy, <u>Austerlitz 1805</u>, (Hamden, CT: Archon Books, 1977) p. 37-51. See also Chandler, pp. 381-402.

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34. Russell F. Weigley, <u>The American Way of War: A History of United States Military Strategy and Policy</u>, (Bloomington, IN: Indiana University Press, 1977) pp. 83-84.

35. Weigley, <u>The American Way of War</u>, p. 95.

36. Larry H. Addington, <u>The Patterns of War Since the Eighteenth Century</u>, (Bloomington, IN: Indiana University Press, 1977) p. 115.

37. Alfred Thayer Mahan, <u>The Influence of Seapower upon History</u>, (New York: Hill and Wang, 1957) p.481. Mahan actually stated, "Commerce-destroying by independent cruisers depends upon wide dissemination of force. Commerce-destroying through control of a strategic center by a great fleet depends upon a concentration of force. Regarded as a primary, not as a secondary, operation, the former is condemned, the latter justified, by the experience of centuries." Mahan also quotes Jomini's assertion that certain principles of war apply throughout the ages without regard to tactics on p. 18.

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42. William Carr, The Origins of the Wars of German Unification, (New York: Longman, 1991), pp. 24-32 and 89-91.

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47. Howard, War in European History, (Oxford: Oxford University Press, 1976), p. 100.

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